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 8. (New) Hydraulic piston, in particular brake piston for an automotive vehicle brake, with a thermochemically treated surface, with several superposed layers at the piston surface, comprising:

a layer of oxide that is arranged directly at the piston surface and has a thickness of at least $1\mu\text{m}$,

a connecting layer which is arranged beneath the layer of oxide and is mainly composed of nitrides,

a diffusion layer that is arranged beneath the connecting layer and includes nitrogen in a dissolved condition or separated nitrides, wherein the connecting layer has a minimum thickness of $8\mu\text{m}$.

9. (New) Hydraulic piston as claimed in claim 8, wherein the connecting layer includes capillary tubes which are respectively closed at the piston surface by portions of the layer of oxide.

10. (New) Process for surface treatment of a hydraulic piston, in particular a brake piston, comprising the following procedure:

a nitrocarburization of the piston in a gaseous medium;

a postoxidation of the piston in a medium yielding oxygen O_2 ;

a machining of the oxidized surface for adjusting the surface quality.

11. (New) Process for surface treatment of a hydraulic piston as claimed in claim 10, wherein the nitrocarburization of the piston is carried out in several stages:

